Trend Study 4-9-01

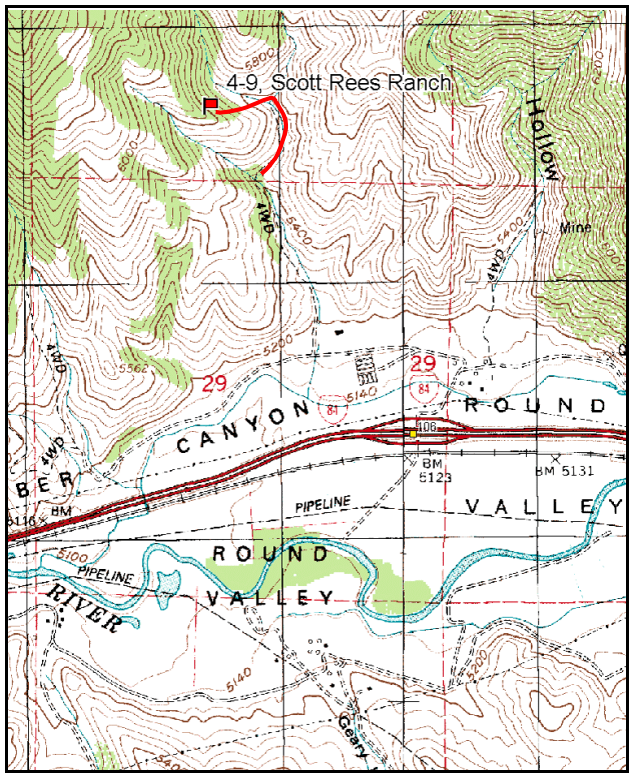
Study site name: Scott Rees Ranch . Vegetation type: Gambel Oak .

Compass bearing: frequency baseline 165 degrees magnetic.

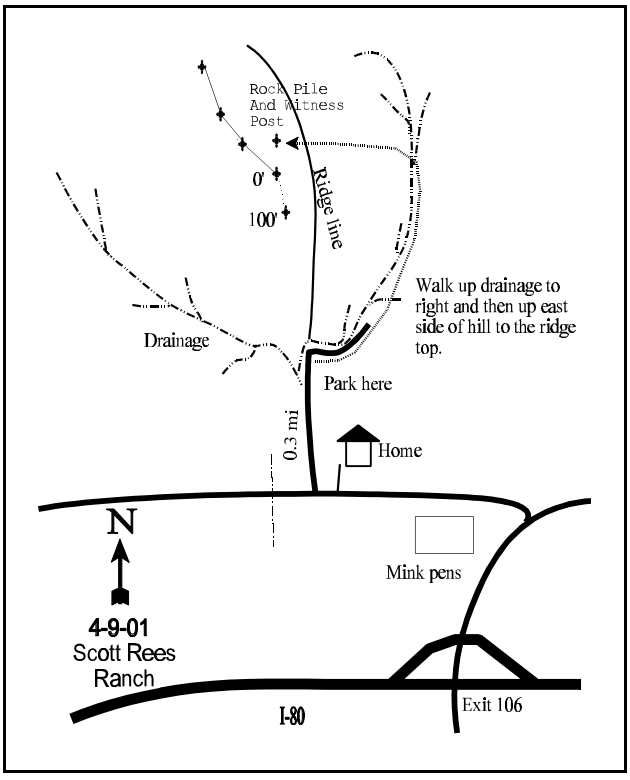
Frequency belt placement: Line 1 (11 & 95ft), line 2 (59ft), line 3 (34ft), line 4 (71ft).

LOCATION DESCRIPTION

On I-80 between Morgan and Henefer, take exit 106 and go north to the Scott Rees Ranch. Turn left (west) on the road north of the mink pens. Drive on this road approximately 0.3 miles past the main house and turn right (north). Drive up a rough road 0.3 miles to the end of the road at a fork in the canyon and where a 4-wheeler trail takes off. From here walk up the road past the draw and continue around the hill. Start walking up the east slope of the hill to the ridge top. On top of a knoll in low growing oak, there is a rock pile with a witness post sticking out of it. The 0-foot baseline stake is just south of the rock monument, and is marked by browse tag #7971. The first 100 feet of the baseline runs 165 degrees magnetic. The rest of the baseline runs off the 0-foot baseline stake. Line 2 runs 258 degrees magnetic. Line 3 runs 252 degrees magnetic. Line 4 runs 277 degrees magnetic. Contact the land owner prior to accessing the site.



Map Name: Morgan



Diagrammatic Sketch

Township 4N , Range 3E , Section 20

UTM 4545657 N 446713 E

DISCUSSION

Trend Study No. 4-9

The Scott Rees Ranch study samples critical deer winter range in the Weber River Canyon, east of Morgan. Located north of Round Valley, the study area has a steep (45%), south-southwest facing slope occupied by low growing Gambel Oak interspersed by an occasional mountain big sagebrush and white rubber rabbitbrush. Deer use was moderate to heavy in 1984, but it had little significant impact on vigor or reproduction of oak. The low growth habit of oak on this site may limit it's availability when snow becomes deep and crusted. Numerous winter killed deer were observed during the 1984 reading within the immediate study site vicinity. During the 1995 reading, pellet group quadrat frequency for deer and elk were moderately low. This study area, although owned by the DWR, reportedly is grazed by trespass sheep almost every year. Sheep sign was noted in 1996. A pellet group transect read on the site in 2001, estimated 32 deer and 4 elk days use/acre (79 ddu/ha and 10 edu/ha). Most of the deer pellet groups were found in open areas where there was no oak brush. It also appears that deer use this area primarily in the spring. Four deer were seen on site during the 2001 reading (6-15-01).

The soil is shallow and very rocky on the surface and throughout the profile. Effective rooting depth is estimated at only a little over 8 inches. Soil texture is a clay loam with a neutral soil reaction (pH of 6.9). Due to the high rock cover and the steep southwest aspect, soil temperature is high, averaging 74°F at about 8 inches in depth. The study area has three principal cover components, aerial vegetative crowns, surface rock, and litter. Where low growing oak occurs, litter cover is also good and little erosion originates from these sties. Current erosion is confined primarily to oak interspaces and unavoidable terracing of the steeper slopes. The soil erosion condition class was determined as stable in 2001.

Browse composition consists almost entirely of low growing Gambel oak. On this site, average height of mature oak is only about 24 inches. In spite of low stature and past rather heavy use, the oak has a high level of vigor and an abundance of young sprouts. This species may even be spreading outward to lessen the extent and number of oak interspaces. Soil characteristics (site potential) are probably the principal factor limiting height of oak. Root sprouting is certainly not inhibited. Density of stems/acre has fluctuated considerably since 1990, likely due to sampling errors in counting the very abundant oak stems. Even though stem density was much lower in 1996 compared to 2001 (9,240 stems/acre compared to 16,120 stems/acre), strip frequency and average cover have remained fairly similar. Oak received moderate use in 1990 and 1996, but only light use in 2001. Vigor has been normal during all readings and percent decadence is low.

Other shrubs occur rarely. They include broom snakeweed, white rubber rabbitbrush, Saskatoon service berry, bitterbrush, and mountain big sagebrush. The latter three have sustained exceptionally heavy use and mostly are decadent plants.

The herbaceous understory contains six perennial grasses of which bluebunch wheatgrass is the only abundant perennial species. Annual grasses, consisting of rattlesnake and Japanese brome, cheatgrass, and rattail fescue dominate the grass component by providing 76% of the total grass cover in 1996 and 55% in 2001. Among perennial forbs, Louisiana sage, thistle, low fleabane, and yellow salsify are the most common. Perennial grasses and forbs are most common in association with oak brush with the open interspaces dominated by annual grasses and forbs.

1984 APPARENT TREND ASSESSMENT

Soil trend appears stable or slightly down. Slope steepness is such that outstanding cover is required to prevent soil movement. Study site cover is only fair. Vegetative trend appears quite stable. The only possible change in the immediate future may be an expansion of Gambel oak. Herbaceous production is unlikely to improve.

1990 TREND ASSESSMENT

This site remains dominated by Gambel oak, with a lack of other browse on the slopes. The low-growing oak is moderately hedged. A majority of the plants display reduced vigor and decadence due to heavy insect infestation. Cheatgrass and bluebunch wheatgrass are the most common understory plants. The shallow, rocky soil has adequate protection to prevent erosion on the study site. Slopes with less vegetation are subject to disturbance and excessive soil movement.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - stable but dominated by annuals (3)

1996 TREND ASSESSMENT

Trend for soil is up slightly due to a decline in percent bare ground and an increase in litter cover. Trend for oak is stable. The change in density is likely due to the larger sample used in 1996. However, it appears that young plants have declined in number since 1984. Utilization is mostly moderate and vigor has improved since 1990. Trend for the herbaceous understory is down for perennial grasses but improved for forbs. Overall trend is considered slightly down due to a significant decline in the sum of nested frequency for bluebunch wheatgrass. The improvement in forb nested frequency comes primarily from low value weedy species.

TREND ASSESSMENT
soil - up slightly (4)
browse - stable (3)
herbaceous understory - slightly down (2)

2001 TREND ASSESSMENT

Trend for soil is stable with abundant protective ground cover on the site. Trend for Gambel oak is also stable. The 65% increase in density appears to be caused by observer error in 1996. Since strip frequency and cover of oak have remained stable, the estimated density of 26,120 stems/acre in 2001, is likely correct. Use of the stunted oak was light in 2001. It is difficult to judge utilization of oak brush, especially low growing plants. The stunted life form of the low growing oak brush, has an appearance of a hedged growth form when it actually has not been utilized. There are no other significant sources of browse forage on this site. Trend for the herbaceous understory is up slightly. Sum of nested frequency for perennial grasses increased, including a significant increase in the frequency of bluebunch wheatgrass. Annuals, cheatgrass and Japanese brome also declined significantly. Sum of nested frequency for perennial forbs also increased.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - up slightly (4)

HERBACEOUS TRENDS --
Herd unit 04 , Study no: 9

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'84	'90	'96	'01	'84	'90	'96	'01	'96	'01
G	Agropyron spicatum	ab201	b227	a168	b221	77	85	62	80	7.03	9.83
G	Bromus brizaeformis (a)	-	-	b102	a49	-	-	41	21	.83	.13
G	Bromus japonicus (a)	-	-	b120	a77	-	-	43	36	2.13	.38
G	Bromus tectorum (a)	-	-	b347	a207	-	-	94	69	21.03	9.11
G	Carex spp.	-	-	-	4	-	-	-	1	-	.15
G	Festuca myuros (a)	-	-	a15	b94	-	-	6	38	.37	3.53
G	Koeleria cristata	-	-	-	6	-	-	-	2	-	.06
G	Poa bulbosa	-	-	-	9	-	-	-	3	-	.04
G	Poa pratensis	b24	a-	b19	b17	10	-	8	6	.38	.15
G	Poa secunda	a7	b31	ab19	b32	4	17	8	17	.09	.40
Total for Annual Grasses		0	0	584	427	0	0	184	164	24.36	13.15
Total for Perennial Grasses		232	258	206	289	91	102	78	109	7.50	10.64
Total for Grasses		232	258	790	716	91	102	262	273	31.87	23.80
F	Achillea millefolium	ab6	a2	b20	b25	2	1	9	8	.26	.72
F	Agoseris glauca	a-	a3	a9	b20	-	1	4	11	.02	.15
F	Alyssum alyssoides (a)	-	-	a-	b16	-	-	-	7	-	.22
F	Allium spp.	a-	a-	a-	b14	-	-	-	7	-	.08
F	Amsinckia menziesii	-	-	-	3	-	-	-	1	-	.00
F	Artemisia ludoviciana	c109	a38	ab64	bc92	46	20	32	38	2.07	2.48
F	Astragalus utahensis	2	-	6	4	1	-	2	2	.06	.18
F	Balsamorhiza sagittata	8	5	4	6	5	2	1	3	.25	.51
F	Camelina microcarpa (a)	-	-	-	3	-	-	-	1	-	.00
F	Calochortus nuttallii	4	-	1	7	2	-	1	5	.00	.03
F	Cirsium undulatum	19	27	34	17	13	18	18	8	1.17	.93
F	Collomia linearis (a)	-	-	a14	b52	-	-	6	21	.03	.13
F	Comandra pallida	b55	a3	a9	a10	22	1	5	6	.07	.08
F	Collinsia parviflora (a)	-	-	a-	b66	-	-	-	26	-	.40
F	Cryptantha spp.	-	3	-	-	-	1	-	-	-	-
F	Cymopterus spp.	-	-	-	3	-	-	-	1	-	.03
F	Delphinium nuttallianum	-	-	4	-	-	-	2	-	.06	-
F	Descurainia pinnata (a)	-	-	a-	b38	-	-	-	17	-	.11
F	Draba spp. (a)	-	-	a-	b10	-	-	-	5	-	.07
F	Epilobium brachycarpum (a)	-	-	a-	b47	-	-	-	22	-	.21
F	Erodium cicutarium (a)	-	-	a7	b51	-	-	3	22	.06	1.42

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'84	'90	'96	'01	'84	'90	'96	'01	'96	'01
F	Erigeron pumilus	$_{a}$13	$_{a}$6	$_{b}$70	$_{a}$3	6	5	32	2	1.95	.06
F	Unknown fern	-	-	-	4	-	-	-	2	-	.01
F	Galium aparine (a)	-	-	$_{a}$11	$_{b}$49	-	-	5	21	.05	.79
F	Gayophytum ramosissimum (a)	-	-	48	34	-	-	21	13	.22	.16
F	Geranium spp.	-	-	-	2	-	-	-	1	-	.00
F	Hackelia patens	3	-	-	-	1	-	-	-	-	-
F	Helianthella uniflora	1	-	-	-	1	-	-	-	-	-
F	Holosteum umbellatum (a)	-	-	$_{a}$28	$_{b}$51	-	-	12	21	.08	.20
F	Lathyrus brachycalyx	-	-	-	3	-	-	-	1	-	.03
F	Lappula occidentalis (a)	-	-	2	-	-	-	2	-	.01	-
F	Lactuca serriola	$_{a}$-	$_{ab}$3	$_{ab}$8	$_{b}$17	-	2	4	7	.04	.06
F	Machaeranthera spp	-	-	1	-	-	-	1	-	.00	-
F	Microsteris gracilis (a)	-	-	-	3	-	-	-	1	-	.03
F	Penstemon spp.	-	-	3	2	-	-	2	1	.03	.03
F	Scutellaria antirrhinoides	-	-	-	11	-	-	-	4	-	.09
F	Tragopogon dubius	$_{a}$18	$_{b}$74	$_{c}$116	$_{d}$152	8	41	54	65	1.51	4.15
F	Zigadenus paniculatus	-	2	-	3	-	1	-	1	-	.06
Total for Annual Forbs		0	0	110	420	0	0	49	177	0.46	3.78
Total for Perennial Forbs		238	166	349	398	107	93	167	174	7.53	9.73
Total for Forbs		238	166	459	818	107	93	216	351	8.00	13.51

Values with different subscript letters are significantly different at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 04 , Study no: 9

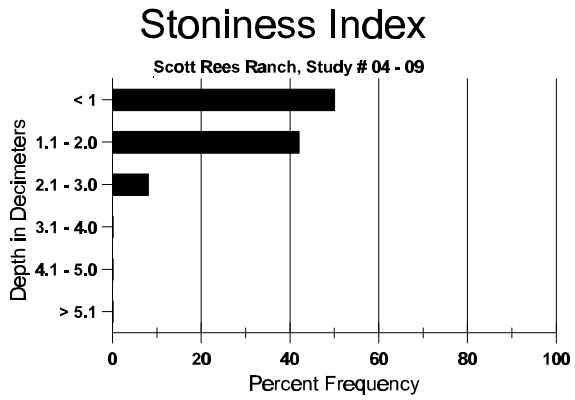
Type	Species	Strip Frequency		Average Cover %	
		'96	'01	'96	'01
B	Amelanchier alnifolia	1	1	-	-
B	Artemisia tridentata vaseyana	11	7	.53	-
B	Chrysothamnus nauseosus albicaulis	0	1	-	-
B	Gutierrezia sarothrae	17	18	.67	.78
B	Purshia tridentata	1	1	.15	.15
B	Quercus gambelii	91	92	27.84	31.14
Total for Browse		121	120	29.19	32.07

BASIC COVER --
Herd unit 04 , Study no: 9

Cover Type	Nested Frequency		Average Cover %			
	'96	'01	'84	'90	'96	'01
Vegetation	387	362	2.25	2.75	56.99	63.45
Rock	231	222	31.25	30.75	15.05	15.46
Pavement	14	5	1.50	.75	.10	.01
Litter	397	377	52.50	59.75	64.02	58.97
Cryptogams	37	15	2.25	0	.26	.14
Bare Ground	41	42	10.25	6.00	.32	1.12

SOIL ANALYSIS DATA --
Herd Unit 04, Study no: 09, Scott Rees Ranch

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
8.4	74.2 (7.9)	6.9	38.6	34.1	27.4	2.9	22.5	217.6	.6



PELLET GROUP FREQUENCY --
Herd unit 04 , Study no: 9

Type	Quadrat Frequency		Pellet Transect	
	'96	'01	Pellet Groups per Acre ⁄01	Days Use per Acre (ha) ⁄01
Sheep	4	-	-	-
Elk	4	1	52	4 (10)
Deer	11	15	418	32 (79)
Rabbit	-	-	17	N/A

BROWSE CHARACTERISTICS --
Herd unit 04 , Study no: 9

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier alnifolia																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	1	-	-	-	-	1	-	-	-	66	28	33	1
	96	-	-	1	-	-	-	-	-	-	1	-	-	-	20	52	18	1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	-	-	-	-	-	-	-	1	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	
'90	100%	00%	00%	-70%
'96	00%	100%	00%	+ 0%
'01	00%	100%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'84	0	Dec:		0%
'90	66			0%
'96	20			0%
'01	20			100%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	1	6	-	-	-	-	-	-	-	7	-	-	-	140	22	27	7
	01	2	-	-	2	-	-	-	-	-	4	-	-	-	80	22	25	4
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	1	1	2	-	-	-	-	-	-	4	-	-	-	80			4
	01	4	-	1	-	-	-	-	-	-	4	-	-	1	100			5
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	320			16
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	100			5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	
'90	00%	00%	00%	
'96	64%	18%	00%	-18%
'01	00%	11%	11%	

Total Plants/Acre (excluding Dead & Seedlings)			
'84	0	Dec:	0%
'90	0		0%
'96	220		36%
'01	180		56%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Cercocarpus ledifolius																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	19	49	0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	
'90	00%	00%	00%	
'96	00%	00%	00%	
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	0	Dec:	-
	'90	0		-
	'96	0		-
	'01	0		-

Chrysothamnus nauseosus albicaulis																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	-	-	-	-	-	1	-	-	1	-	-	-	20			1
M	84	1	-	-	-	-	-	-	-	-	1	-	-	-	66	31	31	1
	90	-	1	-	-	-	-	-	-	-	1	-	-	-	66	35	41	1
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	+ 0%
'90	100%	00%	00%	
'96	00%	00%	00%	
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	66	Dec:	-
	'90	66		-
	'96	0		-
	'01	20		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	84	1	-	-	-	-	-	-	-	-	1	-	-	-	66	12	7	1
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	48	-	-	-	-	-	-	-	-	48	-	-	-	960	15	20	48
	01	29	-	-	-	-	-	-	-	-	29	-	-	-	580	11	14	29
D	84	-	1	-	-	-	-	-	-	-	1	-	-	-	66			1
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	50%	00%	00%	
'90	00%	00%	00%	
'96	00%	00%	00%	-38%
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	132	Dec:	50%
	'90	0		0%
	'96	960		0%
	'01	600		0%

Purshia tridentata																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	37	54	0
	01	-	-	-	-	-	-	-	-	1	1	-	-	-	20	47	61	1
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	1	-	-	-	1	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	
'90	00%	00%	00%	
'96	00%	100%	100%	+ 0%
'01	00%	100%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	0	Dec:	0%
	'90	0		0%
	'96	20		100%
	'01	20		0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Quercus gambelii																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	31	-	-	-	-	-	-	-	-	31	-	-	-	620			31
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	84	148	-	33	-	-	-	-	-	-	181	-	-	-	12066			181
	90	68	61	3	1	9	-	-	-	-	65	77	-	-	9466			142
	96	70	18	-	1	-	-	-	-	-	89	-	-	-	1780			89
	01	169	-	-	-	-	-	-	-	-	165	4	-	-	3380			169
M	84	46	9	124	-	-	-	-	-	-	179	-	-	-	11933	21	11	179
	90	1	40	-	-	-	-	-	-	-	-	41	-	-	2733	21	22	41
	96	36	291	13	-	-	-	-	-	-	340	-	-	-	6800	24	31	340
	01	1099	13	-	-	-	-	-	-	-	1109	3	-	-	22240	23	16	1112
D	84	3	23	27	-	-	-	-	-	-	53	-	-	-	3533			53
	90	18	39	-	-	-	-	-	-	-	12	30	1	14	3800			57
	96	1	19	13	-	-	-	-	-	-	33	-	-	-	660			33
	01	23	2	-	-	-	-	-	-	-	24	-	-	1	500			25
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	460			23
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	920			46

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	08%	45%	00%	-42%
'90	62%	01%	06%	-42%
'96	71%	06%	00%	+65%
'01	01%	00%	.07%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	27532	Dec:	13%
	'90	15999		24%
	'96	9240		7%
	'01	26120		2%